

CENTRAL ILLINOIS LIGHTING COMPANY)

)

Docket No. 02-0837

Proposed general increase in gas rates)

)

(Tariff filed on November 22, 2002)

)

PREPARED REBUTTAL TESTIMONY

OF

DR. JONATHAN A. LESSER

ON BEHALF OF

CENTRAL ILLINOIS LIGHT COMPANY

CILCO REBUTTAL EXHIBIT 7.10

April 17, 2003

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1 **I. WITNESS IDENTIFICATION**

2

3 **Q1: Please state your name, address, and occupation**

4 A1: My name is Dr. Jonathan A. Lesser. My business address is Navigant Consulting,
5 1795 Williston Road, S. Burlington, VT 05403. I am currently employed as a
6 Senior Managing Economist with Navigant Consulting, Inc. (“NCI”).

7

8 **Q2: Are you the same Dr. Lesser who previously submitted direct testimony in**
9 **this case?**

10 A2: Yes I am.

11

12 **II. PURPOSE OF REBUTTAL TESTIMONY**

13

14 **Q3: What is the purpose of your rebuttal testimony?**

15 A3: I have been asked to comment on the testimony submitted on behalf of the
16 Attorney General’s Office and the Citizens Utility Board by Mr. David Effron,
17 and the testimony submitted by Illinois Commerce Commission (“ICC” or “the

18 Commission”) Staff witness Ms. Rochelle Phipps. My comments will address
19 these witnesses’ conclusions regarding a fair return on common equity for Central
20 Illinois Light Company (“CILCO” or “the Company”). Additionally, I have
21 updated my initial analysis to derive a more current recommended allowed return
22 on common equity (“COE”).

23

24 **Q4: Please summarize Mr. Effron’s allowed return on common equity**
25 **recommendation.**

26 A4: Mr. Effron recommends that CILCO’s allowed return on common equity be set to
27 10.65%, based on the Commission’s findings in Docket Nos. 98-0545 and 98-0546,
28 which set the rate of return for two other gas utility subsidiaries of Ameren
29 Corporation, the current parent company of CILCO. The Commission issued
30 Orders in this consolidated Docket in early 1999.

31

32 **Q5: Please summarize your comments regarding Mr. Effron’s recommendation.**

33 A5: I cannot comment on the analysis Mr. Effron used to support his recommendation,
34 since he does not provide any in his testimony. Since his recommendation appears
35 to be based solely on a Commission decision that is over four years old, it should be
36 given no weight in this proceeding.

37

38 **Q6: Please summarize Ms. Phipps’s allowed return on common equity**
39 **recommendation.**

40 A6: Ms. Phipps recommends that CILCO’s allowed COE be set to 10.57%.

41 **Q7: Do you agree with Ms. Phipps's recommended allowed return on common**
42 **equity for CILCO?**

43 A7: No. Ms. Phipps's analysis suffers from several analytical and theoretical flaws,
44 and logical inconsistencies. After correcting these flaws and inconsistencies,
45 however, I used many of Ms. Phipps's own assumptions to develop my own
46 updated COE recommendation, which reflects data through March 31, 2003.

47
48 **Q8: Please summarize the results of your updated COE recommendation.**

49 A8: In my opinion, a reasonable allowed return on common equity for CILCO is
50 between 11.65% and 11.76%. This rate includes an allowance of 7 basis points
51 for previous flotation costs, as I discussed in my direct testimony and as Ms.
52 Phipps herself included.

53
54 **Q9: Please summarize your comments regarding Ms. Phipps's analysis.**

55 A9: I found several of Ms. Phipps's views and analytical procedures to be generally
56 reasonable. Specifically, I found generally reasonable her: 1) use of the quarterly
57 discounted cash flow ("DCF") model to estimate an allowed cost of common
58 equity; 2) choice of a representative sample group of natural gas distribution
59 utilities (with one exception) as the basis for both her DCF estimates, and
60 estimates developed using the Capital Asset Pricing Model ("CAPM"); 3) twin
61 sources of earnings growth rates used in her DCF estimates; and 4) estimate of an
62 expected market return for the CAPM.

63

I also found a number of her views and analytical procedures to be unreasonable. Specifically, I found unreasonable her: 1) conclusions regarding the application of the Efficient Markets Hypothesis (“EMH”); use of a single-day stock price estimate, and modification to the required calculation of expected future dividend payments in her DCF model; 2) empirical estimate of a single average stock price “beta” for her sample group of companies, which was used in developing her COE recommendation using the CAPM; 3) conflicting logic as to the appropriate expected risk-free interest rate; and 4) rejection of my Risk Premium (“RP”) approach based on an inapt algebraic “proof.” I also disagree with many of Ms. Phipps’s comments regarding my Prepared Direct testimony and am especially perplexed by her claims of “bias” regarding several of my assumptions, when those assumptions were more “conservative” than her own. Finally, I found several arithmetic and data errors in Ms. Phipps’s DCF model calculations.

Q10: How is the remainder of your rebuttal testimony organized?

A10: In the next Section, I will discuss the flaws in Ms. Phipps’s estimation of an allowed COE using a DCF model, including her application of the EMH and the specific arithmetic errors she made in applying her DCF model. In Section IV, I will discuss the theoretical and empirical errors she made in estimating an allowed COE using the CAPM. In Section V, I will address Ms. Phipps’s criticisms of my testimony, especially my use of the Risk Premium (“RP”) model, which I consider to be separate and distinct from the CAPM. Finally, in Section VI, I will present

my updated estimates for a reasonable allowed return on common equity for CILCO.

III. ERRORS IN MS. PHIPPS'S DCF MODEL AND ESTIMATES

Q11: Please discuss the errors in Ms. Phipps's DCF model estimates

A11: Ms. Phipps developed estimates for the allowed return on common equity for each of the nine companies that make up her sample group. She used the closing stock price for each of the sample group companies from a single day: February 28, 2003. Ms. Phipps justifies the use of a single day's stock price based on: 1) an implicit appeal to the EMH and, 2) unfounded statements that suggest the COE is independent of changing stock prices.

Q12: Please explain the problems with relying on a single day's closing stock price for COE estimates using the DCF model.

A12: Reliance on a single day's closing stock price to determine an allowed COE estimate using the DCF model introduces several problems. First, it raises the question of the nature and reliability of the EMH. Second, it fails to address the short-term uncertainty of such estimates, especially when they are developed in order to establish a utility's long-term allowed return. This latter point is especially important, as I discussed in a recent article, "DCF Utility Valuation: Still the Gold Standard?" which was published in the February 15, 2003 edition of *Public Utilities Fortnightly*.

Ms. Phipps apparently believes not only that the EMH implies that the price of a stock at any given moment in time rationally reflects all future expectations of dividend payments and price appreciation, but also that an estimate of the allowed COE must be based on a single day's stock price only. To support this belief, she also cites two previous Commission Orders in Dockets No. 92-0537 and 95-0076, which criticized the use of averages of historical stock prices by witnesses testifying on behalf of Iowa-Illinois Gas (Docket No. 92-0537) and American Water Company (Docket No. 95-0076).

Q13: Does the EMH require the use of only the most recent, single day's stock price when using a DCF model to determine an allowed COE?

A13: No. In my opinion, Ms. Phipps's conclusions reflect a basic misunderstanding of the EMH and its application.

The nature of the EMH, and the controversies surrounding it, are clarified in two excellent articles that were published in the most recent issue (Winter 2003) of the Journal of Economic Perspectives. The first article, "The Efficient Market Hypothesis and Its Critics," was written by Princeton University economics professor Burton Malkiel, who is perhaps best known for his 1973 book, A Random Walk Down Wall Street. As he states:

The efficient market hypothesis is associated with the idea of a "random walk," which is a term loosely used in the finance

133 literature to characterize a price series where all subsequent price
134 changes represent random departures from previous prices. The
135 logic of the random walk idea is that ... tomorrow's price change
136 will reflect only tomorrow's news and will be independent of the
137 price changes today.¹

138
139 Although it may be tempting to leap from this definition of the EMH to a
140 conclusion that the EMH requires the use of only one day's stock price to
141 determine the appropriate cost of common equity, such a leap is unfounded. The
142 reason, as Prof. Malkiel states in defining efficient markets, is that *efficiency* does
143 not imply *infallibility*:

144
145 [S]uch markets do not allow investors to earn above-average
146 returns with accepting above-average risks. ... Markets can be
147 efficient ...even if they sometimes make errors, as was certainly
148 true during the 1999 – early 2002 Internet “bubble.” ... What I do
149 not argue is that the market pricing is always perfect. After the
150 fact, we know that markets have made egregious mistakes. (emph.
151 added)²

152
153 What this means is that, on any given day, the price of a stock may reflect
154 investor's expectations of future value, but that those expectations may be based
155 on bad information or mistaken beliefs. The second article, by Yale University
156 Professor of Economics Robert Shiller, goes even further. He argues that the
157 EMH suffers from serious limitations, suggesting that stock prices do not follow
158 the “random walk” patterns that the EMH would imply. Instead, Prof. Shiller and
159 other economists argue that there are behavioral patterns embedded in stock
160 prices.

¹ B. Malkiel, “The Efficient Market Hypothesis and Its Critics,” Journal of Economic Perspectives 17 (Winter 2003), pp. 59-82. [Hereafter “Malkiel”].

² Malkiel, at 60-61.

161

162 Although these two distinguished economists differ as to the applicability of the
163 EMH to stock prices, both agree that the EMH does not preclude pricing errors.
164 To assert that, applying a DCF model to establish and fix a cost of common equity
165 for a regulated utility, with an expectation that the cost of equity will be applied
166 over a multi-year period until a subsequent rate case, *requires* the use of one day's
167 stock price invites error and, worse, unfairness, to utility ratepayers, investors, or
168 both.

169

170 **Q14: Please provide an example.**

171 A14: Using Ms. Phipps's DCF model together with the earnings growth rate data she
172 provided in Exhibit 3.0, Schedule 3.5, I calculated an implied COE for each of the
173 nine companies in her sample group, based on daily closing stock prices between
174 January 2, 2003 and March 31, 2003. The results of my calculations are shown in
175 Exhibit 7.11.

176

177 As Exhibit 7.11 shows, the calculated COE's for each day vary quite a bit over
178 this relatively short period. In the case of NICOR, for example, the variation is
179 almost 300 basis points. The average variation for all nine companies is 79 basis
180 points for the period.³ This large variation begs the question of timing a COE
181 calculation. For example, had Ms. Phipps performed her DCF calculation using

³ If New Jersey Resources is excluded, as I do for my comparables group, this range increases to 85 basis points.

182 closing stock prices on March 12, 2003, she would have calculated an average
183 COE of 10.97%.⁴ Conversely, had she performed her calculation based on
184 closing stock prices on January 6, 2003, she would have calculated an average
185 COE of 10.18%. Exhibit 7.12 provides a chart of the daily calculated average
186 COEs, illustrating how they changed over this three month time period.

187
188 As I discussed in my February 15, 2003 Public Utilities Fortnightly article, the
189 problem with a single-day approach is that the overall level of utility stock price
190 volatility has more than doubled in the last ten years. This volatility is the cause
191 of the large variation in calculated COEs using daily closing stock prices over this
192 period. Even if it were reasonable to use a single day's closing stock price as the
193 basis of a COE estimate years ago, when utility stocks offered "widow and
194 orphan" stability, it is unreasonable to believe that the allowed COE for a
195 regulated utility should swing so much in so little time, especially if that allowed
196 COE is likely remain in place for several years.

197
198 **Q15: As a consequence of the observed volatility in these calculated COEs over the**
199 **January – March time frame, what other problems arise with Ms. Phipps's**
200 **"one-day" DCF approach?**

⁴ Ms. Phipps's actual calculations, which she presents in Schedule 3.8 of her testimony, are flawed, because she miscalculated almost all of the expected quarterly dividends shown on Schedule 3.7 of her testimony. I discuss these calculation errors further below.

201 A15: The most obvious problem with this daily price approach is “shopping” for
202 specific dates in search of “favorable” closing stock prices. For example, I could
203 update my DCF estimate using the March 12, 2003 closing prices, leading to an
204 allowed COE estimate of 10.97%. I do not believe this approach is consistent
205 with the spirit of Supreme Court’s “just and reasonable” criteria, as set out in its
206 *Bluefield Water Works* and *Hope Natural Gas* decisions.

207

208 **Q16: Please comment on Ms. Phipps’s argument that observed changes in stock**
209 **prices do not necessarily reflect changes in the required return on common**
210 **equity.**

211 A16: In her direct testimony, Ms. Phipps criticized my use of a 30-day average of
212 previous stock prices as a violation of the EMH. She further stated, however, that

213

214 [A]n observed change in the market price [of a stock] does not
215 necessarily indicate a change in the required rate of return on
216 common equity. Rather, a price change may simply reflect
217 investors’ re-evaluation of the expected dividend growth rate. In
218 addition, stock prices change with the approach of dividend
219 payment dates. Consequently, when estimating the required rate of
220 return on common equity using the DCF model, one should
221 measure the expected dividend yield and the corresponding growth
222 rate concurrently

223

224 [Phipps, Direct at 16, lines 342-349]. This statement suffers from contradictory
225 logic. First, it implies that any calculation of the COE using any given day’s
226 stock prices may be incorrect, because her statement implies that a previous
227 closing day’s stock price may have been the “correct” price with which to
228 calculate a COE value. The problem is that, using Ms. Phipps’s logic, one would

229 never know if this were true or not, and thus never know what was the “correct”
230 date from which to select stock prices. Second, Ms. Phipps argues that stock
231 prices change with the approach of a dividend payment date. In addition to being
232 unfounded (stock prices, after all, change all the time), if one accepts her
233 statement as true, then the EMH (as Ms. Phipps describes it) cannot hold, because
234 the EMH means that stock price changes cannot be accurately predicted. Ms.
235 Phipps wants to have it both ways: she wishes to select a specific day’s closing
236 stock price that suits her, while arguing that the choice of any other day’s price
237 doesn’t mean the COE values she derives are invalid.

238
239 **Q17: In addition to the problems you discussed arising from the use of a single**
240 **day’s closing stock prices, did you find other errors in Ms. Phipps’s DCF**
241 **calculations?**

242 A17: Yes. Ms. Phipps’s Schedule 3.7 contains several errors. These errors arise
243 because Ms. Phipps does not use the correct future dividend payments as
244 specified in the quarterly DCF model she shows in her testimony [Phipps, Direct
245 at 15, line 310].⁵ In the quarterly DCF model as shown by Ms. Phipps in her
246 testimony, each of the previously paid quarterly dividends for the year is assumed
247 to increase at the expected dividend growth rate. However, when she actually
248 calculates these expected dividend payments, Ms. Phipps assumes that quarterly

⁵ Ms. Phipps’s DCF model specification is identical to the one presented in of D. Parcells, The Cost of Capital – A Practitioner’s Guide, Society of Regulatory and Financial Analysts (SURFA), 1997, at 8-10 (equation 8.12).

dividends can only be adjusted on an annual basis, and only beginning in the same quarter as the previous year's change (if any). Ms. Phipps justified this change in the DCF formula because, "[M]ost utilities declare and pay the same dividend per share for four consecutive quarters before adjusting the [dividend] rate." [Phipps, Direct at 17, lines 363-364]. Although Ms. Phipps's observation may be true for "most" utilities, it is certainly not a requirement. More importantly, it is not consistent with the quarterly DCF model she herself uses, which assumes that dividends increase at the stated growth rate each quarter. Her modification results in a downward bias in her DCF estimates.

Q18: What is the impact of this bias?

A18: After correcting for the dividend payment errors, which I show in Schedule 7.13, Ms. Phipps's calculated COE (based on the February 28, 2003 closing stock prices she used) increases from 10.70% to 10.76%.

IV. ERRORS IN MS. PHIPPS'S CAPM MODEL AND ESTIMATES

Q19: Please summarize the errors in the allowed COE estimate made by Ms. Phipps using the CAPM.

A19: Ms. Phipps's CAPM analysis is flawed because of a fundamental misunderstanding of the CAPM and its components. As a review, the CAPM is a single-factor risk premium model that posits a linear relationship between non-

company-specific (*i.e.*, “undiversifiable” or “systematic”) risk and expected return. The CAPM structure is

$$E(R) = R_f + \beta [E(R_m) - R_f],$$

where: $E(R)$ = the expected rate of return on the stock;

R_f = the risk-free rate of return;

$E(R_m)$ = the expected “market” rate of return; and

β = the stock price “beta.”

In using the CAPM, Ms. Phipps made several errors. First, she failed to use the appropriate expected risk-free rate and instead used a rate that, by her own logic, is biased downwards. Second, her estimate of the expected market rate of return is wrong, as she misunderstands the definition of a “market” rate of return and, as a result, estimated an expected market rate that is biased downwards. Third, Ms. Phipps’s econometric estimates of individual stock price “betas” for her sample group are flawed, and also suffer from a downward bias.

Errors Developing a Risk-free Rate

Q20: Please explain the errors Ms. Phipps made in developing an estimate of the risk-free rate of return.

A20: Ms. Phipps used a single day’s value (February 28, 2003) of the U.S. Treasury long-term bond yield, 4.88%, as her estimate of the risk-free rate of return. Although I agree with the choice of the U.S. Treasury long-term bond rate as an

appropriate proxy for the risk-free rate, I do not agree with her use of a single-day's value as the correct proxy.

After stating that the yield on long-term Treasury bonds is an appropriate proxy for the risk-free rate, Ms. Phipps then states that the risk-free rate should be similar to the expected real (*i.e.*, inflation-adjusted) growth rates for gross domestic product ("GDP") [Phipps, Direct at 24, lines 501-510]. She then compares her 4.88% long-term Treasury bond rate and the expected risk-free rate that she derives from several long-term economic forecasts. Two of these are forecasts of expected real GDP growth, produced by Global Insights ("Global") and the U.S. Dept. of Energy, Energy Information Administration ("EIA"). The third is a forecast of future inflation, published in the Survey of Professional Forecasters ("Survey"). According to Ms. Phipps, these three forecasts together "*imply a long-term, nominal risk-free rate between 5.7% and 6.3%*" [Phipps, Direct at 23, lines 490-491, *emph. added*].

From this statement in her testimony, I concluded Ms. Phipps believed that a reasonable projection of the long-term risk-free rate is between 5.7% and 6.3%, or 6.0% on average. Yet, instead of using this as the basis for a risk-free rate, she instead used the February 28, 2003 published yield on long-term Treasury bonds of 4.88% as the risk-free rate for her CAPM analysis.

316 This contradiction was reinforced in Ms. Phipps's own testimony, in which she
317 stated:

318
319 EIA, Global Insights and Survey forecasts of inflation and real
320 GDP growth expectations suggest that the U.S. Treasury bond
321 yield more closely approximates the long-term risk-free rate,
322 currently. It should be noted, however, that the U.S. Treasury
323 bond yield is an upwardly biased estimator of the long-term risk-
324 free rate ...
325

326 [Phipps, Direct at 23, lines 491-495]. Thus, Ms. Phipps simultaneously concluded
327 that the long-term risk free rate was between 5.7% and 6.3%, based on the
328 forecasts of GDP growth and inflation she cited, and that the current yield on
329 long-term Treasury bonds – 4.88% or 112 basis points *below* the average forecast
330 long-term risk-free rate – was nevertheless an *upwardly* biased estimator of that
331 same long-term risk free rate. Her two conclusions are logically inconsistent.
332 Therefore, 1) either the forecasts she cited as the basis for her risk-free rate
333 conclusions were not, in fact, reasonable, but were biased upwards more than 110
334 basis points or 2) the 4.88% value she used as the risk-free rate in her CAPM
335 model estimates is too low an estimate of the risk-free rate. Both cannot be true at
336 the same time. Unless Ms. Phipps has strong empirical evidence that the forecasts
337 developed by Global, EIA, and the *Survey* are wrong, her own methodology
338 suggests she should have used a risk-free rate of approximately 6.0 percent for her
339 CAPM model estimates of the allowed COE.

340
341 **Q21: Can you resolve the contradiction in Ms. Phipps's testimony?**

342 A21: Yes. Ms. Phipps created this logical contradiction because she failed to base her
343 risk-free rate estimate on a forecast of the expected long-term Treasury bond rate.
344 Instead, she used the (then) current spot-rate. At the very least, this violates her
345 emphasis on the forward-looking nature of the allowed return on common equity.

346

347 The April 2003 issue of Blue Chip Financial Forecasts (“BCFF”) provides a
348 forecast of the expected interest rates on long-term Treasury bonds that steadily
349 increases over the next six quarters. (I have reproduced this BCFF data in Exhibit
350 7.14) By the third quarter of 2004, the rate is forecast to be 5.8%. This rate is
351 quite consistent with the forecast range of 5.7% to 6.3% cited by Ms. Phipps.

352

353 **Q22: In your previous direct testimony, you used a risk-free rate of 5.38%. Should**
354 **you now use a risk-free rate of 6.0% as well?**

355 A22: In my previous testimony, I developed an estimate of the risk-free rate by taking
356 an average of the forecast rates published in the October 2002 issue of BCFF for
357 the subsequent six quarters. In the April 2003 issue of BCFF, this six-quarter
358 average is 5.33%. I believe this rate is a conservative estimate of the expected
359 long-term risk-free rate, as it represents a forecast over then next one and one-half
360 years. I believe the long-term forecast range Ms. Phipps cited in her testimony,
361 however, is appropriate to use as the basis for determining a risk-free rate.
362 Therefore, to develop an updated range of the allowed COE for CILCO
363 (presented in Section VI, below), I have used both a 5.33% value, based on the

latest BCFF published estimates, and a 6.0% value, based on the long-term forecasts cited by Ms. Phipps.

Errors Specifying the Market Rate of Return

Q23: Please summarize the errors made by Ms. Phipps in developing an estimate of the expected market rate of return.

A23: Ms. Phipps's calculation of an expected market rate of return fundamentally misunderstands what that rate represents and, as a consequence, suffers from a downward bias from the "true" expected market rate, based on the arguments she raised in her own testimony. I also find it peculiar that, even though Ms. Phipps used a *higher* estimated market rate than I did in my previous direct testimony, she nevertheless accused me of introducing an upwards bias in my calculation of that expected market rate. As with Ms. Phipps's discussion of the risk-free rate, there is a logical disconnect in her arguments.

Q24: Please explain how Ms. Phipps misunderstands the nature of the expected market rate of return.

A24: To compute an expected market rate of return, Ms. Phipps performed a DCF analysis for the 350 firms listed under the S&P 500 that currently pay dividends. She then calculated a weighted average of these individual DCF estimates based on the individual companies' current market capitalizations.

387 **Q25: Is the DCF methodology used by Ms. Phipps appropriate for estimating an**
388 **expected market rate of return?**

389 A25: No. This approach to estimating an expected market rate of return is
390 fundamentally flawed, because it violates the underlying theory of the CAPM
391 itself. In the CAPM, the market rate of return represents the return on all risky
392 assets, including stocks and bonds. There is nothing in the CAPM suggesting that
393 the expected market rate of return should be based *only* on the expected return of
394 dividend-paying stocks, yet this is precisely what Ms. Phipps has done.
395 Furthermore, Ms. Phipps also failed to consider the effects arising from individual
396 stock capitalization values that differed from those stock's book values, since the
397 DCF model tends to drive a stock's price to its book value. Finally, Ms. Phipps
398 failed to acknowledge that her methodology must result in a downward bias to the
399 expected market rate of return she calculated, based on the arguments she herself
400 presented in her own direct testimony.

401
402 Specifically, Ms. Phipps stated that non-dividend paying stocks will increase in
403 price relative to dividend-paying stocks:

404
405 For a non-dividend paying company, 100% of total return comes
406 from capital appreciation (i.e., a price increase about the price paid
407 to initially purchase the stock). The market would expect the
408 prices of those companies to appreciate relative to the prices of
409 stock [sic] that generate income for investors.
410
411

[Phipps, Direct at 38-39, lines 813-819]. If Ms. Phipps is correct, then the higher expected growth rates of non-dividend paying stocks means their expected returns are higher. Therefore, since Ms. Phipps estimated an expected market rate of return using only dividend paying stocks, her own argument implies that the estimate of a 14.29% market rate of return she derived must be biased downwards.⁶

Q26: Ms. Phipps criticized your calculation of a historic market risk premium, stating that you “improperly removed the impact of declining interest rates from U.S Treasury returns” [Phipps, Direct at 37, lines 774-776]. Do you agree with this criticism?

A26: No. Ms. Phipps’s conclusions about interest rate levels are logically flawed. In her direct testimony, Ms. Phipps argued that my calculation of an average historical market risk premium was upwardly biased. This argument appeared to be based on her conclusion that “the general level of interest rates has declined since 1926” [Phipps, Direct at 36, lines 770-771], although she provided no empirical data to support her conclusion.

To understand Ms. Phipps’s errors in logic, it is useful to review the nature of Treasury bond returns. First, Treasury bond returns, like most bonds, are

⁶ Ms. Phipps’s weighting of these DCF estimates using market value data from the Chicago Board of Options Exchange [Phipps, Direct at 25, lines 523-528], is also inconsistent with the simple averaging she used in her DCF model estimate.

comprised of three components, income, capital appreciation, and reinvestment. Income is derived from the coupon rate on the bond. Capital appreciation is derived from changes in the price of the bond itself (not its face value). Reinvestment return derives from using the income derived to purchase new bonds. The total return on a bond is the sum of these three components. Thus, it is not surprising to observe that total Treasury bond returns are greater than Treasury bond income returns alone. Since total returns over the 1926-2001 period were greater than income returns during that period, Ms. Phipps concluded that the general level of interest rates must have declined. This leap in logic is wrong.

In fact, as the Ibbotson Associates, SBBI Valuation Edition, 2002 Yearbook (“SBBI Yearbook”) itself states, “Yields have generally *risen* on long-term bonds over the 1926-2001 period.”⁷ If anything, higher yields mean a *higher* general level of interest rates, not a lower one. Over the 1926-2001 time period, capital appreciation for long-term bonds was negative, reflecting unexpected changes in interest rates. Again, as the SBBI Yearbook states,

Price changes in bonds due to unanticipated changes in yields introduce price risk into the total return. Therefore, the total return on the bond series does not represent the riskless rate of return. There is no evidence that investors expect the historical trend of bond capital losses to be repeated in the future (otherwise, bond prices would be adjusted accordingly). Therefore historical total returns are biased downward as indicators of future expectations.

⁷ Ibbotson Associates, SBBI Valuation Edition, 2002 Yearbook, at 70 (emph. added).

457 *The income return better represents the unbiased estimate of the*
458 *purely riskless rate of return, since an investor can hold a bond to*
459 *maturity and be entitled to the income return with no capital loss.*⁸
460
461

462 Ms. Phipps next criticized me for using Treasury bond income returns, but not
463 adjusting stock returns to reflect capital appreciation risk, to determine a historic
464 risk premium. Again, her logic is simply wrong. There is no “capital
465 appreciation” risk associated with stocks, since there is no specified holding
466 period, as with a bond. Furthermore, to the extent that the general level of interest
467 rates actually *increased* over the period 1926-2001, not decreased as Ms. Phipps
468 states, then Ms. Phipps’s logic suggests I should have *added* a capital appreciation
469 factor to stock returns over the 1926-2001 period, not subtracted it. The historic
470 market risk premium I calculated, 7.42%, is *exactly* the same market risk
471 premium calculated in the SBBI Yearbook.⁹ Unless Ms. Phipps is suggesting
472 that Ibbotson Associates is wrong as well, her criticisms have no merit. They are
473 based on incorrect assumptions, bad theory, and flawed logic.

474
475 **Q27: Ms. Phipps states that any use of historical data to estimate a company’s cost**
476 **of capital is wrong, and violates past Commission Orders. Do you agree?**

477 A27: No. The use of historical data to determine a “forward-looking concept” is
478 appropriate and necessary.

⁸ Ibid, at 71 (emph. added)

⁹ Id. at 66.

479

480 First, both the DCF and the CAPM necessarily use historic data in their
481 calculations. In the DCF, historic dividend yields are used as the basis for
482 forecasting future dividend payments. Earnings growth rate forecasts will almost
483 always be “historic” relative to today’s stock price. In the CAPM, historic stock
484 prices are necessarily used to calculate individual stock price betas. So, the
485 notion that it is “inappropriate” to use historical data in determining a company’s
486 cost of capital is untrue.

487

488 Second, historic data can also provide a useful guide to the future, especially
489 when the “future” is based a one-day “snapshot” of future earnings growth and
490 interest rates. I examine historical data because such data can be a useful guide in
491 determining whether current conditions are aberrant.

492

493 **Q28: Please discuss Ms. Phipps’s criticism of your estimate of the expected market**
494 **rate of return.**

495 A28: Ms. Phipps criticized my estimate of the expected market rate of return, which
496 took both historic and forecast data into account, as having an *upwards* bias,
497 despite the fact that the expected market rate of return I used in the CAPM
498 calculations I presented in my direct testimony, 13.85% (equal to a risk-free rate
499 of 5.38% plus a risk-premium of 8.47%), was *lower* than her expected market rate
500 of return estimate by 44 basis points. Since Ms. Phipps’s own logic implies that

her estimate is biased downwards, if anything my estimate must have been overly conservative, rather than upwardly biased.

My estimate of the expected market rate of return also reflected a much broader portfolio of assets than did Ms. Phipps. As such, my approach is far more representative of the “true” expected market rate of return. The Value Line portfolio I used as the basis for the “market” is composed of 1700 stocks, far more representative sample than 350 dividend-paying stocks.

Ms. Phipps also criticized me for not weighing my estimates by each stock’s market capitalization. But as I have discussed, the problem with such a weighting scheme, especially in the context of a DCF estimate, is that if a stock’s price differs from its book value, the weighting scheme itself introduces bias.

Nevertheless, since the rate Ms. Phipps uses, 14.29%, is higher than the expected market rate of return I used in my direct testimony, and must be biased downwards by her own logic, I have adopted this rate as a “conservative” estimate for the updated CAPM analysis I provide in Section VI.

Errors Estimating Sample Group Company Betas

Q29: Please explain the errors made by Ms. Phipps in estimating betas for her sample group of companies.

524 A29: Ms. Phipps developed betas for her sample group of companies by taking an
525 average of betas published by the Value Line Investment Survey and estimates of
526 betas she developed using a regression model. However, instead of estimating
527 betas for each individual company, as firms such as Value Line do, Ms. Phipps
528 estimated a single, average beta value. Although directly estimating an average
529 beta estimate will be unbiased relative to taking the average of individual
530 company betas, this approach results in a less precise (*i.e.*, one having a larger
531 standard deviation) average beta value than estimating betas for each company
532 individually.¹⁰

533

534 **Q30: Please comment on Ms. Phipps's use of 60 month's worth of return data to**
535 **estimate her average beta.**

536 A30: There is no uniquely "correct" number of data points that should be used to
537 estimate stock betas. Value Line uses five years' worth of weekly data.
538 Compustat, on the other hand, uses monthly data over five years, while
539 Bloomberg on-line allows users to specify daily, weekly, or monthly data for any
540 desired time period. In theory, one wants to use the longest time period possible.
541 However, if an individual company or industry experiences a structural change
542 (such as electric utility deregulation), then it advisable to not use data reflecting
543 (say) pre- and post-restructuring.

¹⁰ It is important to note that an "unbiased" estimate does *not* mean the two approaches will yield the same average beta value. Since all of the regressions will contain residual errors, the estimated overall average beta will likely differ quite a bit from an average of individual company beta estimates. Even if the difference is statistically insignificant, the financial impact on a company can be very significant.

544

545 In my opinion, the more serious problem with Ms. Phipps's regression
546 specification is the loss of econometric precision. To understand this, it helps to
547 understand a few concepts involving averages of statistical data.

548

549 **Q31: Please explain.**

550 A31: With any statistical estimate, whether a stock's beta value or the effectiveness of a
551 new drug, we tend to prefer greater precision. For example, suppose we use a
552 regression model to estimate the beta for Company XYZ. If the estimated beta is
553 0.50, but the standard error of the estimate is 0.4,¹¹ we cannot really be sure if the
554 beta is statistically different from zero, because the standard error is almost as
555 large as the beta value itself.

556

557 Normally, the standard error of an average value will be much smaller than the
558 standard error of the individual estimates that make up that average. For example,
559 suppose we want to estimate the average height of adult males in Illinois. If we
560 take a random sample of 5 men, we can compute an "average height," but the
561 "average" we derive may be quite different if we select a second random sample.
562 The larger the individual samples, and the more of them we take, the more precise
563 will be our estimate of the average height.¹² In fact, the standard error of the

¹¹ The standard error is, for all intents and purposes, the same as the standard deviation.

¹² In the limiting case, we could measure the height of the entire population of adult men. In that case, the standard error would be zero.

average estimate will decrease with the square root of the number of random samples we take.

Now consider an analysis to determine the average stock price beta for a sample group of nine companies. We can calculate that average beta in two ways:

1. Estimate betas for each company using a regression model and then take the average of all nine betas; or
2. Combine all the data and use a regression model to estimate an overall average beta directly.

Of the two methods, we might be tempted to use the second one, since it provides an average beta with just one regression. However, in doing so, we are sacrificing precision. Specifically, since the first method estimates nine separate betas, the average beta we compute using the first method will be more precise by a factor of three (since the square root of nine equals three). Ms. Phipps's beta estimation approach is, therefore, less accurate than estimating individual company betas and taking an average of the results. The reason is that, while she captures the "within-group" variance in her estimate, she fails to include the "between-group" variance that is captured when regressions are estimated separately for each of the individual sample group company betas.¹³ As a result, Ms. Phipps's estimation

¹³ To see this, note that, for each of the 60 months, Ms. Phipps first determines an average excess return for the nine sample group companies. She then regresses these monthly average values on the excess market returns over the 60-month period. What she fails to incorporate specifically is the variance of the individual company returns in each month, treating the average return for the month as if there was no underlying variability in that monthly average value. This is the source of the false precision in her estimation approach.

585 approach provides a false level of precision, and her regression estimate of an
586 average beta should not be used.

587
588 The clearest possible example of this can be seen as follows. Suppose I estimated
589 a beta value for each of the nine companies comprising the sample group using
590 only two data points on excess returns. In this case, each regression estimate of
591 beta would be “perfect,” since I can always fit a straight line exactly through two
592 points. As a result, I would derive nine separate estimated beta values. Next, I
593 could determine the average of all of the nine beta estimates, and the variance of
594 that estimate.

595
596 Now suppose instead I use Ms. Phipps’s beta estimation approach. I would first
597 compute the average excess returns over the nine companies. I would then
598 estimate an average beta using the two data points, which now represent an
599 average of the excess returns, rather than individual company excess returns. I
600 would again fit the regression “perfectly,” and there would be no standard error
601 associated with my average beta estimate. Can I conclude that this second
602 approach is more accurate, since my estimate would have no variance
603 whatsoever? The answer is no. I will have simply imposed a false level of
604 precision on my average beta estimate by failing to incorporate the variability in
605 the excess returns explicitly. This false precision is why the approach Ms. Phipps
606 used to estimate her overall average sample group beta should not be used.

608 **Q32: Do you believe it is reasonable to use the Value Line Investment Survey**
609 **published betas for the individual sample group companies?**

610 A32: Yes. There is nothing to suggest that the individual company betas published by
611 Value Line are unreasonable. Furthermore, these published betas are more likely
612 to be relied on by investors than individual regression estimates such as those
613 prepared by Ms. Phipps.

614
615 **V. RESPONSE TO PHIPPS'S CRITICISMS OF THE RISK PREMIUM**
616 **MODEL**

617
618 **Q33: Please summarize Ms. Phipps's criticisms of the risk premium (RP) model**
619 **and the estimate of the allowed COE you developed using that model.**

620 A33: Ms. Phipps presented several criticisms. In addition to her ongoing criticism of
621 my use of any historic data, she faulted my arithmetic calculation of an equity risk
622 premium, based on weighting my sample companies' credit rankings according to
623 their outstanding debt levels. She also criticized the credit ratings that I used to
624 develop a weighted equity risk premium.

625
626 Her main criticism, however, was a supposed algebraic "proof" that, if true,
627 would imply that the RP is inherently biased [Phipps, Direct at 41-42, lines 869-
628 888]. But while Ms. Phipps's algebra may have been correct, the proof was itself
629 of no value, and revealed a fundamental misunderstanding of the RP model that
630 must be explained.

631

632 **Q34: Please explain how Ms. Phipps misunderstands the RP model.**

633 A34: In her algebraic proof, Ms. Phipps showed that the RP model inherently biases the
634 COE upwards for companies whose stock betas are less than one. She arrived at
635 this conclusion by assuming that the RP model merely substitutes an expected
636 return on a corporate bond for the risk-free rate in the CAPM. If this were true,
637 Ms. Phipps's proof would be correct and the RP model would not be used.
638 Because Ms. Phipps has fundamentally misconstrued the RP model, however, her
639 proof of an upward bias is wrong.

640

641 **Q35: Please explain how the RP model differs from the CAPM.**

642 A35: The CAPM posits a linear relationship between the expected return on an
643 individual security and the portfolio of market securities, based on the non-
644 diversifiable (or "systematic") risk in the market. That is, the CAPM assumes
645 that all asset-specific, or diversifiable, ("non-systematic") risk can be, in fact,
646 eliminated by purchasing combinations of the market portfolio and the security.
647 In the CAPM, beta is the measure of this systematic, non-diversifiable risk.
648 Multiplying beta by the market risk premium (i.e., $E(R_m) - R_f$), provides an
649 estimate of the systematic risk premium. Thus, the CAPM assumes that an
650 investor eliminates all of the non-systematic risk by diversifying his portfolio.

651

652 In contrast, the RP method reflects *both* systematic and non-systematic risk. The
653 RP method assumes that a company's cost of equity will reflect some premium

over its cost of debt. Diversifiable, or company-specific risk, is reflected in the RP using an estimate of the prospective long-term bond yield for a company, because a company's bond rating reflects an assessment of all of the diversifiable business and financial risks a company faces. The S&P credit ratings that Ms. Phipps refers to early in her testimony [Phipps, Direct at 7-10, lines 145-206], are based on S&P's assessment of these types of risks. Since the RP method addresses company-specific risk, it is not surprising that it will show a higher cost of equity than the CAPM, which does not. What Ms. Phipps has done in her "proof" is to take the RP assumption of an equity risk premium over the cost of debt and fold it into the CAPM. This is wrong because the models are fundamentally different.

Q36: Please respond to Ms. Phipps's criticism of your use of a weighted average bond rating in your RP estimate.

A36: Ms. Phipps had two specific criticisms: 1) I used both S&P and Moody's credit rankings, and the two were not always comparable; and 2) that I improperly developed an overall weighted average bond rating based on overall levels of corporate debt. Regarding the first criticism, I examined both Moody's and S&P's bond ratings because the agencies don't always agree with each other. In the few instances where their ratings differed, I "averaged" the bond rating between the two. I believe this to be a reasonable approach, and superior to simply using one set of ratings. Nevertheless, in Section VI below, I present an updated estimate of the cost of common equity derived using the RP method that

is based solely on the S&P corporate credit ratings used by Ms. Phipps, and which does not use a weighted average rating based on corporate debt levels.

VI. UPDATED ESTIMATES OF THE ALLOWED COST OF EQUITY

Q37: Please discuss how you have updated the initial allowed COE estimates you provided in your direct testimony.

A37: I updated my DCF, CAPM, and RP estimates. For the updated DCF estimate, I removed Cascade Natural Gas from my sample group. I did this because, as noted in Ms. Phipps's testimony [Phipps, Direct at 7, lines 153-154], on January 31, 2003, CILCO's corporate credit rating was increased by S&P to "A-." Cascade's credit ranking continues to be BBB+. Thus, I dropped Cascade from my sample group. Unlike Ms. Phipps, however, I continue to exclude New Jersey Natural Gas from my sample group because New Jersey Resources does not derive at least 75% of its revenue from gas operation. I also updated the earnings growth estimates I previously used from I/B/E/S and Zacks, the same sources of earnings growth used by Ms. Phipps.

Q38: Please discuss your updated DCF estimate.

A38: I have taken my updated DCF estimate directly from Exhibit 7.11. Specifically, I computed an average of the previous 30 days' computed daily DCF estimates using Ms. Phipps's model, but excluding New Jersey Resources from those calculations. In doing so, I have calculated an updated COE value of 10.77%,

based on the previous 30 trading days. This rate is two basis points higher than the 10.75% corrected estimate I calculated for Ms. Phipps's DCF estimate, which was based on February 28, 2003 closing stock prices.¹⁴

Q39: Please discuss your updated CAPM estimate.

A39: To update my CAPM estimate, I used the adjusted betas for each of the sample group companies, as published by in the March 21, 2003 issue of the Value Line Investment Survey, Individual Company Reports. I used two estimates of the risk-free rate. The first, 5.33%, is based on the forecast rate for long-term Treasury bonds, as published in the April 2003 issue of Blue Chip Financial Forecasts. The second, 6.00%, is based on Ms. Phipps's own testimony as I previously discussed in Section IV. Again, Ms. Phipps testified that, based on forecasts prepared by Global Insights, the U.S. Dept. of Energy, Energy Information Administration, and the Survey of Professional Forecasters, "imply a long-term, nominal risk-free rate between 5.7% and 6.3%" [Phipps, Direct at 23, lines 490-491. I used the average value in that range. For the expected market rate of return, I used the same value as that derived by Ms. Phipps, 14.29% [Phipps, Direct at 25, lines 526-528]. Based on these data, I calculate COE values of 11.6% (using a risk-free rate of 5.33%) and 11.8% (using a risk-free rate of 6.0%). My CAPM model estimates are shown in Exhibit 7.15.

¹⁴ Including New Jersey Resources, the 30-day average ending March 31, 2003 also results in a DCF estimate of 10.75%, the same corrected value as Ms. Phipps's calculation based on February 28, 2003 closing stock prices.

720

721 **Q40: Please discuss your updated RP estimate.**

722 A40: For my updated RP estimate of the cost of common equity, I used the forecast
723 rates on AAA rated and BBB rated corporate bonds, as published in the April
724 2003 issue of Blue Chip Financial Forecasts, and shown in Exhibit 7.14. These
725 were 6.42% and 7.47%, respectively, indicating a bond spread of 105 basis points.
726 To determine the appropriate bond-weighted premium, I have used an unweighted
727 average of the corporate credit ratings, as Ms. Phipps suggested. This results in a
728 net addition of 55 basis points to the expected AAA-rated bond rate, or 6.99%.

729

730 To this value of 6.99%, I next added a beta-weighted forecast equity risk
731 premium. The equity risk premium equals the expected market rate of return
732 (14.29%), less the expected rate on AAA-rated corporate bonds (6.42%), for a net
733 value of 7.87%. The average beta for my entire sample group was 0.70.
734 Multiplying that value by 7.87% yields an equity risk premium of 5.51%. Adding
735 that value to the 6.99% bond rate equals 11.89% (after accounting for rounding).
736 Details of these calculations are provided in Schedule 1 of Exhibit 7.16.

737

738 **Q41: Please summarize your updated recommendation for CILCO's allowed**
739 **return on common equity.**

740 A41: The table below provides a summary of my updated estimates of CILCO's
741 allowed COE. The table contains two columns of estimates, reflecting the two

different risk-free rate estimates and, hence, the two different estimates using the CAPM.

UPDATED COE ESTIMATES

	Based on Risk-free rate of 5.33% (JAL)	Based on Risk-free Rate of 6.0% (Phipps)
DCF Model*	10.77%	10.77%
CAPM**	11.60%	11.80%
<u>RP</u>	<u>12.50%</u>	<u>12.50%</u>
AVERAGE:	11.62%	11.69%
 Plus Flotation Costs	 <u>0.07%</u>	 <u>0.07%</u>
 TOTAL:	 11.69%	 11.76%

*- Does not include NJ Resources. If included, average of previous 30 days = 10.75%, identical to Phipps's corrected 02/28 estimate.

** - CAPM estimate varies with choice of risk-free rate. DCF and RP estimates do not.

The average allowed COE values using the three alternative methods range between 11.62% and 11.69%. Adding to that the 7 basis point flotation cost allowance results in an overall range of 11.69% to 11.76%. I believe a value in the middle of that range, 11.73%, represents a fair and reasonable allowed COE for CILCO at this time.

Q42: Does this conclude your rebuttal testimony?

A42: Yes.